

\$--PGN Sentence

\$--PGN – PGN Data

This sentence transports NMEA 2000 Single Frame messages over NMEA 0183. The MiniPlex will output this sentence with Talker ID "MX". When sent to the MiniPlex, the Talker ID is ignored unless a Filter Rule exists for this sentence.

Format: \$--PGN,pppppp,aaaa,c--c*hh<CR><LF>

pppppp: PGN of the NMEA 2000 message, 3 byte hexadecimal number. If the PGN is non-global, the lowest byte contains the destination address.

aaaa: Attribute Word, 2 byte hexadecimal number. This word contains the priority, the DLC code and then source/destination address of the message, formatted as shown below:

15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

S Priority DLC Address

S: Send bit. When an NMEA 2000 message is received, this bit is 0. To use the \$MXPGN sentence to send an NMEA 2000 message, this bit must be set to 1.

Priority: Message priority. A value between 0 and 7, a lower value means higher priority.

DLC: Data Length Code field, contains the size of the message in bytes (1..8) or the the Class 2 Transmission ID (9..15).

Address: Depending on the Send bit, this field contains the Source Address (S=0) or the Destination Address (S=1) of the message.

c--c: Data field of the NMEA 2000 message, organized as one large number in hexadecimal notation from MSB to LSB. This is in accordance with "NMEA 2000 Appendix D", chapter D.1, "Data Placement within the CAN Frame".

The size of this field depends on the DLC value and can be 1 to 8 bytes (2 to 16 hexadecimal characters).

NMEA 2000 Reception

When the multiplexer converts an NMEA 2000 message into an \$MXPGN sentence, the S bit in the Attribute field will be 0 and the Address field contains the source address of the message. The destination address of the message is either global or contained in the lower byte of the PGN, in accordance with the NMEA 2000/ISO specification.

NMEA 2000 Transmission

A \$--PGN sentence sent to the multiplexer will be converted to an NMEA 2000 message if the S bit in the Attribute field is 1.

The Address field is the Destination Address of the NMEA 2000 message. The Source Address of the message will be the address the multiplexer has acquired during the Address Claim Procedure. If a global PGN is used, the contents of the Address field will be ignored. A non-global PGN can be sent globally by setting the Address field to 0xFF.

The Destination Address of a non-global PGN can also be specified by loading it into the lower byte of the PGN. The Address field of the Attribute word must be set to 0x00 for this.

The DLC field must be set to the size of the Data field (1 to 8 bytes) and the actual size of the Data field must match with the DLC. If the DLC field is used as a Class 2 Transmission ID (9..15), the size of the Data field must be 8 bytes/16 characters. If any of these conditions is not met, the message will not be transmitted.

For quick transmission of an NMEA 2000 message, the Attribute field of the \$--PGN sentence may be omitted. In this case, the following values for the Attribute will be assumed:

S: 1

Priority: 7

DLC: Set automatically from the size of the Data field (c—c) field.

Address: 0. The Destination Address of the message will be contained in the PGN field (pppppp).

Examples

A received PGN 127250 (hex: 1F112, Vessel Heading) will be converted into the following \$MXPGN sentence:

```
$MXPGN,01F112,2807,FC7FFF7FFF168012*11
```

The Attribute word shows a received frame (S=0), with priority 2, it is 8 bytes and the Source Address is 0x07.

To transmit PGN127250, the following \$--PGN sentence must be sent to the multiplexer:

```
$MXPGN,01F112,A800,FC7FFF7FFF168012*65
```

In this example, the Address field of the Attribute field is ignored and set to 0x00 because PGN 127250 is a Global PGN.

An ISO Request (PGN 059904) can be transmitted in the following ways:

```
$MXPGN,00EA00,F309,01F016*68
```

```
$MXPGN,00EA09,,01F016*1D
```

In both cases, this message is sent to Destination Address 0x09. In the first sentence, the Destination Address is specified in the Attribute word, the second sentence has it embedded in the PGN field.